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Digital India is an initiative by the Government of India to ensure that Government services are made available to citizens electronically by improving online infrastructure and by increasing Internet connectivity. It was launched on July 1, 2015 by Prime Minister Narendra Modi.

Background

The journey of e-Governance initiatives in India took a broader dimension in mid 90s for wider sectoral applications with emphasis on citizen-centric services. Later on, many States/UTs started various e-Governance projects. Though these e-Governance projects were citizen-centric, they could make lesser than the desired impact. Government of India launched National e-Governance Plan (NeGP) in 2006. 31 Mission Mode Projects covering various domains were initiated. Despite the successful implementation of many e-Governance projects across the country, e-Governance as a whole has not been able to make the desired impact and fulfil all its objectives.

It has been felt that a lot more thrust is required to ensure e-Governance in the country is able to promote inclusive growth. It is expected that e-Governance policy thrusts should cover electronic services, products, devices and job opportunities. Moreover, electronic manufacturing in the country needs to be strengthened.

In order to transform the entire ecosystem of public services through the use of information technology, the Government of India has launched the Digital India programme with the vision to transform India into a digitally empowered society and knowledge economy.

Digital Infrastructure as a Core Utility to every citizen

- Availability of high speed internet as a core utility for delivery of services to citizens .
- Cradle to grave digital identity that is unique, lifelong, online and authenticable to every citizen .
- Mobile phone & bank account enabling citizen participation in digital & financial space.
- Easy access to a Common Service Centre
- Shareable private space on a public cloud
- Safe and secure cyber-space

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Challenges

Scarce Spectrum: It is a known fact that spectrum is a scarce resource. A further mobile push is likely to make the situation worse. That is one reason why Bharti Enterprises, which has committed Rs 1 lakh crore for Digital India programme, recently acquired stake in a company called, OneWeb, a global team-up of telecom companies aimed at providing affordable internet access. But one such tie-up is not going to solve the problem completely. A spectrum crunch would result in traffic congestion and call drops, which are already commonplace in India. Further more, the shortfall in spectrum is bound to raise demand and prices. We have already seen that in the recently concluded auctions of spectrum. If price of spectrum increases, companies will not be able to provide internet

at affordable prices. This will defeat the very purpose of Digital India initiative.

Lack of an Ecosystem: The initiative also lacks many crucial components including lack of legal framework, weak sensibility of privacy and data protection laws, possibilities of abuse of civil liberties, lack of parliamentary oversight for e-surveillance in India, lack of intelligence related reforms in India, insecure Indian cyberspace, etc. These issues have to be managed first before introducing DI initiative in India. Digital India project is worth exploring and implementation despite its shortcomings that need to be taken care of before its implementation.

Duty anomalies mar electronic manufacturing: Manufacturing has always been a weak link in the India story. Electronic manufacturing is all the more so. Sample this: On 22 June, media reports said Japanese telecom giant SoftBank and Taiwanese Foxconn technologies are in talks to set up joint ventures in India to make electronics products here. Four days later, on 26 June, The Financial Express reported that global mobile phone makers, including Foxconn, may have to rethink their plans because the government has removed the 11.5 percent excise duty concession (this duty concession existed because importers had to pay 12.5% Counter Vailing Duty, while domestic manufacturers had to pay only 1% excise tax on manufacture). Because of a Supreme Court decision delivered recently, and which struck down this gap between taxes paid by importers and domestic manufacturers, the local manufacturers would also now have to pay the same amount as are paid by importers. This would result in removing any price advantage that domestic manufacturers would have gotten otherwise. This SC ruling made domestic manufacturing less lucrative and thus is having the effect of a 'disincentive'. This essentially is a duty anomaly that has the potential to put off global majors from investing in e-manufacturing here. Minister of communication and IT Ravi Shankar Prasad knows this very well. At a recent MoU signing between National Association of Software and Services Companies (Nasscom) and India Electronics and Semiconductor Association (IESA) in Delhi, the minister admitted that correction of duty structure is crucial to increasing electronics manufacturing in the country. According to a report in The Hindu BusinessLine, the minister also acknowledged that for this 'finance minister Arun Jaitley will have to be convinced'.

The government's net-zero import target in the sector has been set at 2020. It will have to move fast on this front to attain this objective. On the whole, while the intent of the initiative is good, it is riddled with challenges.

E - C O M M E R C E

E-commerce (electronic commerce or EC) is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the Internet. These business transactions occur either business-to-business, business-to-consumer, consumer-to-consumer or consumer-to-business.

- Indian e-commerce has seen frenetic activity in the recent past, but it needs to be allowed to grow out of restrictive government regulations. Global players like Amazon and Alibaba have stated deep commitments to developing an India presence.
- Japanese technology major, SoftBank, has invested about \$1 billion in sundry Indian e-commerce outfits, and it has committed to investing \$10 billion over the next few years.
- Local e-retailer Flipkart raised funding to the tune of over \$1 billion and taken over fashion major, Myntra. Snapdeal, Jabong, Foodpanda. Foodpanda, Zomato are symbols of competition in the online market.
- The market is substantial and growing very fast, with a cumulative annual growth rate of over 30 per cent between 2009 and 2014.
- Competition is fierce with online sales often highly discounted - so much so that there have been complaints about “predatory pricing” from brick and mortar retailers.
- By 2018, e-retailing turnover is expected to cross \$22 billion. Even that will be a tiny slice, less than three per cent, of the overall retail market - which should be worth over \$800 billion by 2018.
- So there is ample room for growth and the coincidence of several favourable socio-economic trends means growth should accelerate. The rapid adoption of cheap smart phones implies that close to a billion Indians may soon be on the mobile web. The e-commerce industry has the ability to service Tier-II and Tier-III cities, where there is little brick and mortar retail reach. Marketers have worked around low credit-card reach by setting up cash-on-delivery systems.
- Innovative payment portals, such as Paytm, mobile wallets and payments banks, will make transactions simpler, safer and cheaper. The industry will occupy huge chunks of real estate, ranging from offices, to data centres, to warehouses.
- Apart from providing large revenues to the logistics industry, e-commerce will generate massive employment. It can offer high-end jobs to data scientists and MBAs, and also absorb less-skilled labour at the low-end of the delivery and logistics chain.
- Red tapism is one of the major stumbling blocks. Restrictions on foreign investment in

multi-brand retail remain, in spite of the protestation even of foreign leaders. This protectionist attitude confines e-retailers to the marketplace model. This is one reason for industry disputes with state excise and sales tax departments.

- It is unclear who is liable for local taxes - is it the seller, or the marketplace? Warehouses have been raided with states alleging non-compliance with the cumbersome formalities for transporting goods across state borders. It is high time that the regulatory regime was simplified to allow free play to e-commerce. If restrictions on foreign direct investment were removed and state taxes rationalised, efficiencies would dramatically improve.
- An opportunity exists to modernise the retail sector, boost inter-state trade, generate mass employment and create positive spin-offs for real estate and logistics. It would be imprudent not to take it.
- The Department of Posts has initiated the process of starting a Payment Bank and e-commerce venture. Payment banks are entities that target low value and high volume money transaction mainly used by laborers, migrants, small businesses. They require vast reach deep into India's villages where money can be transferred. Indian Postal network has no competition in terms of its reach. Usually there is a post office in every village even when there is no mobile network.
- In the past few decades, India has seen a surge in migration of villagers to industrial hubs in search of employment. A large volume of remittances are sent by these workers to their families. Currently most of it is carried out by unofficial channels. With payment banks workers can deposit money in payments banks and their families will take money from their area office. Also, this service will help in connecting rural market to fast growing e commerce services by providing them payment options.

Although e-commerce is still at a nascent stage but it has the potential and the room to scale greater heights. People in rural fringes especially have been familiar with Post offices and money orders for generations, but are largely unaware of e-commerce marketplaces. Facilitating greater rural reach for e-commerce ventures, will help DoP(Department of Post) to generate better revenues. Once established, these payment banks can also be used to transfer cash directly to beneficiaries thus reducing leakages in government schemes.

POWER SECTOR REFORMS

In the modern world, the key progress of a nation is ensured through the availability of regular electrical energy. Countries individually and collectively have been drawing up plans to tap, develop and utilize energy. Electricity is a very crucial factor in achieving economic, social and environmental objectives of sustainable human development. In the present digital age, electricity has emerged as the critical input for sustaining the process of economic as well as social development. Though the Indian Power sector has achieved substantial growth during the Post Independence era, it has been ailing from serious functional problems during the past few decades. Per capita consumption of electricity in India increased from 178 KWh in 1985-86 to 338 KWh in 1996-97, and to 665 KWh in 2005-06.

Power Scenario in India

- In India, there are various power plants, both private and government controlled, which produce electricity.
- Since, electricity is a 'state subject' under the constitution, every state has a local electricity regulator which sets tariff and electricity prices for the electricity that is used by various types of consumers such as commercial users, farmers and households.
- Electricity is provided to consumers through power distribution companies, most of which are government owned. Technically, a private company can enter the business of power distribution, but the market is already saturated with government controlled companies that are also inefficient.
- These distribution companies ('discoms') purchase electricity from power generators and then supply this purchased electricity to consumers, often at prices lower than what they were purchased at. This is because of populist pressures. A state government does not want to alienate its voters by increasing the tariffs of electricity.

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Reforms Needed

Improve Governance of Utilities: India's landmark 2003 Electricity Act must be utilized as a viable framework for institutional governance to improve the performance of the sector, expand access, and ensure sustainability. The various state electricity regulatory bodies must be made to function as autonomous organizations without outside or political interference. They must also be held accountable for their performance.

Show Zero Tolerance for Power Theft

Another aspect of India's power distribution problem is the widespread feeling among consumers that they are entitled to free power. This leads many towards adopting the "Kaatiyabaaz" culture of tapping electricity from the grid without paying. Again, political interference often undermines the utilities' ability to tackle theft or even the collection of bills, as political bosses step in during any departmental drive to enforce collections.

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LABOUR REFORMS

Labour law is the “Body of laws, administrative rulings and precedents” which address the relationship between employee, employer and labour organizations, often dealing with issues of public laws. The primary goal of labour laws is to bring employer and employee on the same level thereby mitigating the difference between the two warring groups.

The History of Indian Labour laws is interwoven with the history of British colonialism. The industrial/labour legislations enacted by the British were framed in the light of industrial development in UK. The laws were primarily intended to protect the rights of British industrialists. The earliest Indian statute that regulated the relationship between employer and employee was Trade Dispute Act, 1929 which was highly biased towards British employers as there were provisions to restrict right to strike and lock out without giving any provision to solve disputes.

Similarly other such legislations were enacted to benefit industrialists. After independence these legislations underwent significant modifications and tilted towards employees to take them out of problems created during British rule.

Constitutional and other Labour Laws in India

Our constitution has many articles directed towards the labourer's interests for e.g., Article 23 forbids forced labor, Art. 24 forbids child labor (in factories, mines and other hazardous occupations) below age of 14 years. Further, Article 43A was inserted by 42nd amendment – directing state to take steps to ensure worker's participation in management of industries. (Gandhi ji said that employers are trustees of interests of workers and they must ensure their welfare.) Labor laws are under concurrent list, meaning thereby that both the Centre and the State can legislate on labor laws. There are approx. 44 central and state laws, most or all of which seek compliance from industries.

Important laws related to Industrial relations are –

- **Employee State Insurance Act** – ESI card is issued, insuring worker against any accident at work. There's also ESI corporation.
- **Employees Provident Fund and Miscellaneous provisions Act** – Provident fund is one in which employee pays part of his remuneration (12 % in most cases) and equal contribution by employer. This is mandatory for establishments employing more than 20 people.
- **Factories Act, 1948** - it is a social legislation which has been enacted for occupational

safety, health and welfare of workers at work places.

- **Child Labor (prohibition and regulation) Act** – prohibits children below age of 14 to work in hazardous jobs. There are demands for a complete ban on employment of children.
- **Industrial Disputes Act** – One important provision has played spoilsport with most industries. It is the provision that bars Industries employing more than 100 people to terminate employees before obtaining the necessary approval of government. There is a strong demand from industry to revise this limit, in order to facilitate easy entry and exit. In the absence of timely approval, the establishment has to continue running the factory, even at a loss.
- **Minimum Wages Act.** - lays down the basic minimum level of wages that employees must be paid.
- **Bonded Labor system (Abolition) Act** – The Act abolished the system in which one time payment was made by employer to supplier or leader of group and whole season's or year's services of labor was taken.

RECENT REFORMS OF THE GOVERNMENT

Apprenticeship Act – In apprentice system, trade workers, engineers (both diploma holder and graduates), 10+2 passed vocational students, need to undergo training in industry to enhance their skill. On completion of this they become regular workers. For this they get stipend in form of remuneration. New amendment increases Stipend to 70 % of wage of regular unskilled worker in first year, and 80% in second year. Non engineers can also be appointed, and their total number could be up to 10% of the total workforce. Now students other than engineering can also seek apprenticeship. About 500 new trades have been added. The amendments have also removed some penalties for Industry – employer can't be jailed for non-compliance.

Factories act – Overtime (normal hours increase), better working conditions, Allows women for overnight work provided there are adequate safeguards and transport facility .

Employees Provident Fund Organization: In the Employees Provident Fund Organization about Rs. 27,000 crore was lying unclaimed. This was due to manual procedures and formalities to get the amount released. When an employee changed his city then it was not possible for him to get his balance while being stationed in the new city. Other reason for the huge unclaimed amount was that some unscrupulous employers deposited the employee's contributions in the name of ghost employees so that the employers could then claim the amount for themselves later. Facilitating a Universal Account Number (UAN) would help addressing both the problems and ensure that the money deposited by the employers for their employees are reaching the latter. This is made possible by allowing easy portability of an employee's EPF account from one employer to another employer upon switching of jobs.

Self-certification of documents: This aims at elimination of troublesome submission procedures, under which returns were to be certified by officials. Now by self-certification method, compliance will be checked randomly through firms/employers selected by computer.

Inspector Raj: A transparent Labor Inspection Scheme for random selection of units for inspection would end undue harassment meted out under the “Inspector Raj,” while ensuring better compliance. Currently, officials have the power to select units on their own discretion. This resulted in rent seeking and corruption.

Number of forms related to compliance with labor laws that employers have to file will drop from 16 to 1.

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RISING PRICE OF PULSES

India is the biggest producer, consumer and importer of pulses in the world. Pulses are the major source of vegetarian protein diet for vegetarian Indians, and protein content in most of the pulses is more than one-fifth by their weight. Pulses crop has the ability to fix nitrogen in the soil. Hence, it is the finest clean green technology crop among all farm crops on this planet.

This year saw a meteoric rise in the prices of pulses, often breaching the Rs. 200 mark for a couple of 'dals'. The 'dal' crises was not an unexpected crisis that sprang out of nowhere. Instead, the crisis systematically built over a couple of years even as the administration remained passive to the rising prices of pulses. Several causes came together to build a heady cocktail of booming prices.

Causes

- **Low cultivable land under pulses:** India is majorly a producer of rice, wheat and sugar. Owing to the difficulty in raising/cultivating pulses, it is not a favourite of many Indian cultivators and farmers, who prefer to raise other crops. As a result, less than 10% of Indian farmlands are put to use for growing pulses.
- **Low global world production:** Most of the countries around the world prefer 'meat' and 'meat products' as a source of protein. Pulses have not really become a favourite source of protein for most countries around the world. As a result, the global levels of production are very low for pulses. Only a handful of countries cultivate pulses. India is the largest producer of pulses (23.1%), with China, Brazil, Canada and Myanmar comprising 27% of the production together. Only these 5 countries together produce half of the global pulse production.
- **Inflationary price tendency:** Low global production is directly responsible for inflationary price tendencies of the pulse grain. A vicious circle is responsible for the problems of price stability and low production of pulses. India is a large importer of pulses. In case of an abnormal shortage in production, both domestic and international prices are bound to go up.
- **Cropping Pattern and Price volatility:** Volatility of pulse prices is an important reason for the crop receiving a step-motherly treatment from farmers. This may perhaps be the reason as to why pulses production hasn't been brought under the cover of irrigated areas. Pulses continue to be largely grown in rain-fed areas, while other crops (cereals) occupy the irrigated areas.
- **Import of pulses to control domestic prices is not an option:** The pulses that are preferred majorly by Indians such as pigeon peas (arhar/toor dal), mung beans, black matpe (urad dal),

etc., is restricted to a few neighboring suppliers like Myanmar and African countries. Thus, even if there is a price rise, the government does not enjoy the luxury of importing it from too many countries, in order to lower domestic price levels. India's average annual import of pulses during 2010-11 and 2014-15 was 3.56 million tonnes. That is roughly a quarter of total pulse exports globally. Any effort to fulfil the production deficit through imports is both difficult and inflationary.

- **Low yield for pulse crops:** While food technology has grown by leaps and bounds in the case of wheat and rice which show good yield levels as compared to half a century ago, the yield in the case of pulses has remained terribly low. Global yield for cereals (rice, wheat, millet, maize, corn) remains at 3.5 tonnes per hectare but it is only 0.86 tonnes per hectare in the case of pulses. (FAO, 2008). Yields have increased modestly over the past few decades (<1%/year). Pulse yields in India are yet to take off. From 1950, yield of pulses have grown marginally as compared to wheat and rice. While the yields of rice and wheat have grown by four and five times respectively, the yield of pulses have only doubled, i.e., pulses have seen only half the growth seen by rice and wheat.
- **Lack of attention:** Compared to cereal crops, pulse crops have not received the same attention and production resources at the farm level.
- **Declining production per capita:** Owing to lower yields and lack of adequate attention, the production levels of pulses have not kept pace with the growing population.
- **Poor Monsoons:** The last two years, 2014 and 2015, have seen poor monsoon rainfall. Foodgrain levels fell by nearly 5% of total production. Areas in Punjab reported lowest monsoon levels in the last 16 years. As a result there was a direct shortfall of 2 million tonnes of pulses.
- **Inadequate Trade:** Of the 70 metric tonnes that is produced globally, only 15 metric tonnes are traded internationally, which is a little above 20% of the total production output. India imports a third of the internationally traded pulses. This spikes up the prices of pulses.
- **Absence of a 'futures' commodity market:** A 'futures market' helps growers, cultivators, and dealers in determining the prevalent prices. This is because a futures market enables traders to establish contracts securing the supply for commodities sometimes in the future. These contracts necessarily have to mention prices in the documents. This reveals 'prices' to other market players and helps in better price discovery. Lack of a futures market therefore directly impedes the price discovery process.

Steps taken to curb rising prices

- **Crackdown against hoarding:** Essential Commodities Act, 1955 was implemented by conducting raids in stores and locations of wholesalers and dealers in order to prevent 'hoarding' of pulses, which is also one of the main reasons behind the upward prices. As part of the measures adopted under the Act, nearly 75000 tonnes of dal had been recovered from hoarders and black marketeers.
- **Banned Exports:** The government banned exports as well as futures trading in commodities. Futures trading in commodities have been banned on the principle that price-speculation could lead to distorted production market as cultivators would strive to grow pulses even in areas unsuitable to their production, in case, their production is driven by speculators betting on the futures market.
- **Zero Duty Import:** The government removed all levies charged at the time of import, in the case of pulses.
- **Minimum Support Price increased:** To incentivise farmers, the MSP of gram and lentils (masur dal) has been increased by Rs. 250 per quintal.
- **Prompt Import:** Imported 5000 tonnes of pulses.
- **Price Stabilization Fund:** The Department of Agriculture & Cooperation approved the Price Stabilisation Fund (PSF) as a Central Sector Scheme, with a corpus of Rs.500 crores, to support market interventions for price control of perishable agri-horticultural commodities. Procurement of pulses will be undertaken directly from farmers or farmers' organizations at farm gate/mandi and made available at a more reasonable price to the consumers, thus eliminating the hoarder/black marketeer who is interested in rising prices. This fund has also been used to subsidize the cost of transporting, handling and milling of pulses, so that the 'distribution' costs are reduced.

Future Steps to be undertaken:

Need for Futures Trading in Pulses: The price risks in domestic marketing as well as importing of pulses underline the need for development of futures trading in pulses for effective price discovery and efficient price risk management. Already, futures trading is allowed in chana. But other pulse varieties are devoid of any such risk management avenue. It is therefore necessary to develop suitable futures contracts for major pulse varieties separately, as also for all pulses together in the form of index futures. Development of such contracts will not only assist in price discovery and risk management to the varied physical market functionaries in pulse trade and industry. Such contracts will also help to bring about price integration among different pulses.

Augment Domestic Production: Systematic steps need to be adopted to augment domestic production as the rest of the world is hardly likely to increase production of pulses.

INTERNATIONAL YEAR OF PULSES

Pulses have captured the attention of the United Nation. The General Assembly of the UN has voted to declare 2016 as the "International Year of Pulses." A variety of pulses including beans, lentils, peas and chickpeas have been the cornerstone of global nutrition for centuries. Having a UN dedicated year will raise the level of awareness of pulses globally and the important role pulses can play in advancing health and nutrition, food security and environmental sustainability.

Beyond traditional markets, pulses have steadily increased in popularity as people around the world recognize their appeal as nutritious, versatile foods that can play an essential part in healthy diets. The idea of a year dedicated to recognizing the role of pulses in sustainable agriculture and healthy diets was conceived., the International Pulse Trade and Industries Confederation. Through the determined support of the several countries, in particular Turkey and Pakistan, and the support of the Food and Agriculture Organization, the International Year of Pulses was passed by the UN General Assembly.

This is the greatest opportunity in a century to give pulses the attention they deserve. Pulses can help to increase food security and nutrition security for those with shortages and to tackle the increase of diseases linked to lifestyles such as obesity and diabetes. Plus, they improve cropping systems and are good for farmers. The International Year of Pulses will give pulses additional research attention and nutritional programming, which will lead to dietary uptake. Increased pulse consumption will grow both healthy people and a healthy planet.

A \$1.1 million corpus has been set aside to fund activities related to IYP 2016. A series of national committees are being established around the world by CICILS members to work with their governments, farmers, NGOs, retailers, food manufacturers, health & science organizations and UN bodies to make the year a success globally and in each country.

India is the world's largest producer (18.5 million tons), importer (over 3 million tons) and consumer (22.0 million tons) of a variety of pulses; yet, the per capita availability of this nutritious vegetable protein is relatively low at about 15 kilograms per annum. For a country that faces persistent protein inflation and has preference for vegetarian diet, pulses are the most economical source of vegetable protein. Higher consumption of pulses will help address the scourge of pervasive malnutrition caused by protein deficiency among large sections of the population.

“Innovation is the specific instrument of entrepreneurship. The act that endows resources with a new capacity to create wealth.” - Peter F. Drucker

India ranks 76 on Global Innovation Index, much below countries such as Malta, Lithuania, Latvia, the Seychelles, Greece and Brazil.

Grassroots Innovation

India's innovation is considered to mostly arise from the Silicon Valley in Bangalore and other hot-spots that are seeing start-up frenzy. However, India's rural areas and those living in lower income groups, have already proven themselves to be innovators that build ideas around sustainable uses of natural resources. There are umpteen examples of grassroots innovation. These innovations are built around curbing deficiency of resources and the consequent deprivation that arises due to such deficiency.

- 1) **Clay refrigerators:** A clay potter, Mansukhbhai Prajapati who lives in a village in Rajkot, Gujarat is the founder of Mitticool Clay Creation, a company that makes refrigerators, water filters, cookers, hot plates and other such items of daily use from clay. The National Innovation Fund (NIF) helped Prajapati to supply clay refrigerators even to markets in London, America, Africa, & Singapore. This model of taking rural innovations to markets worldwide is known as 'grassroots to global' (G2G model).
- 2) **Low Cost Incubators:** Jeganathan, a paediatrician in Chengalpattu Government Medical College in Tamil Nadu, developed a low-cost infant incubator priced at \$100, which is a fraction of the cost of commercial alternatives, and soon cut the hospital's infant mortality by nearly half.
- 3) **Laxmi Asu machine:** NIF's Chintakindi Malleshham, a weaver from a village in Andhra Pradesh, has turned out to be a saviour for hundreds of weavers. The Laxmi Asu machine created by him has relieved women handloom workers from 8-9 hours of labour every day, by automating some processes that go into making a sari. Earlier, a woman worker had to move her hand 18,000 times, to make two saris a day.

The National Innovation Fund, setup in 2000 (under co-operation and guidance of Prof. Anil Gupta) acts towards bringing these grassroots innovation to the forefront and in 'scouting, spawning and sustaining' business ventures built around grassroots innovation. The NIF set up by the Department of Science and Technology, has taken major initiatives to serve the knowledge-rich, economically poor people of the country. It is committed to making India innovative by documenting, adding value, protecting the intellectual property rights of the contemporary unaided technological innovators, as well as of outstanding traditional knowledge holders and disseminating them on a commercial as well as non-commercial basis. Its vision is to make India innovative, and to add value to India's outstanding traditional knowledge base. The NIF also aims to help India become an inventive and creative society and a global leader in sustainable technologies without social and economic handicaps affecting evolution and diffusion of green grassroots innovations.

- The NIF allows anyone to submit an innovative idea through the 'Honey Bee Idea Submission App (android)'.

- The Business Development and Micro Venture Investment Fund (BD & MVIF) of NIF seeks to build a value chain around grassroot innovations (*jugaad*, in common parlance) to facilitate their transition into self-supporting sustainable enterprises. The ultimate objective is to make these innovative products available to the masses through the market mechanism or otherwise. One of its stated objective is, 'to scout, spawn and sustain' green grassroots innovation, eventually converting them into self-sustaining enterprises.

- While innovations have propelled entrepreneurship, yet the risk taking abilities in under represented segments of technologies or new technologies have not witnessed an increase. However, with the Government declaring this decade as the decade of innovation and taking bold steps to support innovation movement in the country, things seem to improve.

Objectives of NIF

Grassroots Innovations Design Studio (GRIDS): Grassroots Innovation Design Studio (GRIDS) for facilitating formal design inputs to the grassroots innovations at premier institutes viz. National Institute of Design, Ahmedabad (Gujarat), Indian Institute of Technology, Gandhinagar (Gujarat), National Institute of Technology, Srinagar (J&K) and Srishti School of Arts, Design and Technology, Bangalore (Karnataka).

Students' Club for Augmenting Innovations (SCAI): A nationwide student movement comprising students from India's best management and technology institutes to provide product development, mentoring and monitoring support to innovators and traditional knowledge holders at the grassroots.

Micro Venture Innovation Fund (MVIF): One of its kind of dedicated risk fund in the world setup with the support of SIDBI in October 2003, and operationalised in January 2004. Under MVIF financial support to grassroots innovators is extended under a single signature on a simple agreement of understanding without any collateral or a guarantor.

Grassroots Technological Innovations Acquisition Fund (GTIAF): Sanctioned in 2011 and operationalised in 2012, GTIAF is to obtain the rights of technologies from innovators after compensating them for the same with the purpose to disseminate/diffuse them at low cost or no cost for the larger benefit of the society.

Gandhian Inclusive Innovation Challenge Awards: Announcement of Challenge Awards by Dr RA Mashelkar in presence of Hon'ble President of India to develop new solutions for three challenges viz. paddy transplanter, wood stove and tea leaf plucking machine.

NIF consciously pursues only environment friendly 'green' innovations, while striving to expand policy and institutional space for the same.

NIF has a large database of over 211,600 ideas, innovations and traditional knowledge, including proprietary, open source and common public knowledge. It maintains a catalogue of innovations. While the percentage of proprietary traditional knowledge (individual or community) and innovations where NIF has filed patents in the names of the individuals or communities is quite low, much knowledge is available (common or open source), which can be disseminated without any IP considerations.

Indian Model of Inclusive Growth

Innovation today is increasingly going beyond the confines of formal R&D to redefine everything. Today innovation can mean new and unique applications of old technologies, using design to develop new products and services, new processes and structures to improve performance in diverse areas, organisational creativity, and public sector initiatives to enhance delivery of services. Innovation is being seen as a means of creating sustainable and cost effective solutions for people at the bottom of the pyramid, and is being viewed as an important strategy for inclusive growth in developing economies.

However, this was done after neglecting another report on draft national IPR policy that had been submitted earlier on July 24th, 2015. The report was submitted by a committee constituted by the ruling dispensation itself. Its members were Prabuddha Ganguly, Shamnad Basheer, and Yogesh Pai. However the submission of the earlier report failed to elicit any response from the government.

The draft national IP policy (24th July, 2015), makes some important comments on the stance to be adopted by India vis-a-vis international IP regimes. It states:

- **Promotion of nation-specific IP goals:** “While India will continue to draw on foreign precedent from jurisdictions that have had a longer and more sophisticated history with intellectual property, it will not blindly adopt their norms.” It further states that India will need to evolve new norms to leverage its technological proficiency while keeping in mind the interests of large segments of the population who are poor and underprivileged and to whom access to pharmaceuticals is crucial. It essentially means that while India will evolve more protection systems for IP, it will not be done at the cost of depriving access to medicines and technology for the vast majority of India's poor.
- **Promotion of a more open IP environment:** It states that India will explore alternative innovation incentives such as prizes and open source/access models that complement existing regimes to foster funding for research into drugs for diseases that disproportionately affect India and the developing world.
- **Disapproval of profiteering from IP registration:** It also states that entities that register IP for the mere purpose of extracting excessive rents without any interest in developing products and services will be discouraged. It also suggests data-driven studies to assess the nexus between foreign direct investment and IP norms and the costs of introducing stronger IP norms.
- **National Policy must be pro-people than pro-IP:** The draft policy unambiguously points out the right of the government to take pro-public health measures such as compulsory licences in instances where patents impede access to medicines. It states: “While rights holders will be encouraged to fulfil part of their social bargain, the government will not hesitate to deploy compulsory licensing, price control and other measures where the rights holders so fail and where the government deems it necessary to check IP excesses and abuse.” [*Compulsory Licensing* is resorted to when an IP based product is very 'essential'. It

could be medicine formulations developed for life-threatening diseases or a technical innovation that is very 'essential' to further innovation or unlocking of large amounts of value for the public. In this case, an IP holder has to mandatorily share its technology and innovation with other third parties who wish to sell it. The IP holder must also do so by treating all the licensees of its IP product on an equal footing without discriminately charging/pricing any one licensee over another.]

- **Status Quo of IP Regime:** The draft states: “India is committed to ensuring TRIPS compliance and will avoid any TRIPS-plus measures, purely at the behest of a trading partner.” This is a significant policy recommendation in the light of increasing pressures from the developed world to thrust TRIPS-plus measures on the developing world through bilateral treaties and regional free trade and investment agreements.
- **Promotion of Innovation for the Informal Economy:** The other specific focus areas that the draft policy proposes are data-driven studies to explore innovation and creativity in the informal sectors to find out the role of incentives and create national and international markets for segments within India’s informal economy.
- **Monetization of IP through public funded research results:** The draft policy also recommends that public-funded innovation and IP be a key focus of the government and that the government explore the possibility of capturing IP generated through public-funded research. For e.g., the research led innovations designed/created at IITs, universities or public institutions be registered as Intellectual Property of the government/people.

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“National innovative capacity has to be the country’s important potential for producing competitive products. Globalization and competitiveness leads to an interconnected economy. This requires the combined effort of researchers, technologists, production engineers and business leaders. For building competitiveness what you need is talent. Leadership grows talent.” - Dr. APJ Abdul Kalam

The continuation of global economic restructuring in the wake of the current economic crisis has presented a number of challenges for India as the country attempts to maintain a competitive global presence through continued prosperity. The present global economic crises presents a unique opportunity for India to provide leadership through innovation. In the contemporary global environment, sustainable economic gains come from attracting and retaining a talented and creative workforce rather than staying focused on existing businesses and industries. Focus on building a talented and creative workforce is a more productive goal because it helps to create a sustainable competitive advantage by driving innovation, new business formation, and encouraging broader improvements in overall productivity and prosperity. In other words; wherever talent goes, innovation, creativity, and economic growth are sure to follow.

Investing in people during times of crisis (instead of businesses or places) provides a proactive and flexible approach to economic restructuring that allows labour markets to adapt, while new businesses, industries, and economic structures emerge. Leading postindustrial nations, such as the United States, Sweden, Japan, Finland, Canada, Germany and the United Kingdom are now competing based on creativity and related factors like technology, innovation, and talent attraction.

Establishing an approach to economic development that centres on creativity will help India to re-build (build) its economy and generate future prosperity. As a result, India should recognize the importance of building Talent, courting Technology and promoting Tolerance in gaining an economic advantage. Taken together, the metrics of Talent, Technology, and Tolerance are referred to as the 3Ts of economic development. Such an approach for India would mean recognizing the creative talent of its residents in order to develop the businesses and industries of tomorrow; investing in the infrastructure required to mobilize more innovation and economic growth; and recognizing the importance of openness and diversity in gaining economic advantage.

Creativity and Innovation are the forces which drive growth, development and progress in the knowledge economy. “Creative India; Innovative India: सृजन भारत; रचत भारत” is the motto which

will inspire India to take a lead in various fields of human accomplishments. Our Constitution enjoins us to “develop the scientific temper” and “spirit of inquiry” and “to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement”.

In a report prepared by Martin Prosperity Institute, it has been suggested that Delhi is the most creative state in India, with Chandigarh, Punjab, Kerala, Goa, Mizoram, Andaman & Nicobar Islands, Puducherry, and Maharashtra rounding out the top 9. Haryana and Manipur are tied for 10th.

The Creative Class in India comprises approximately 14% of the workforce, but varies considerably from region to region. Two regions (Delhi and Jammu & Kashmir) have over 40% of their workforce in the Creative Class while another three (Chandigarh, Punjab, and Goa) are over 20%. Another seventeen have over 10% of their workforce in creative occupations. Within India, the Far North, Far East, and Southern States and Union Territories appear to have higher concentrations of the Creative Class than Central and Western regions. High performing regions tend to have lower overall populations than the low performing regions. Due to smaller populations, the proportion of the population employed in management and professional occupations is relatively higher compared to the same in more populous regions. Approximately 4.1% of Indians over the age of 25 hold a Bachelor's degree or higher. Like the concentration of the Creative Class, Degree share is not evenly distributed around the country. The States or Union Territories with the highest Degree shares are Chandigarh (16.47%), Delhi (13.12%), and Puducherry (8.59%).

Talent Index is an index used to measure the amount of Talent within a region. Talent is measured as the percentage of a region's workforce that is employed in Creative Class occupations. The Creative Class is largely responsible for generating the new and creative ideas that support economic growth. The Creative Class is individuals who are often engaged in either complex problem solving or in the generation of new ideas, new technology, and new creative content. This occupational grouping includes people employed in management, finance, law, healthcare, science, engineering, architecture, design, education, arts, music, and entertainment). The Talent Index combines Creative Class and Degree share measures to illustrate which States and Union Territories have been the most successful in attracting and retaining talented individuals. Chandigarh leads all regions followed in second by Delhi, Goa, Kerala, and Puducherry.

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INDIA AND STARTUP CULTURE

- India is witnessing a startup revolution and to harness the potential of India's innovators and entrepreneurs a vibrant financial ecosystem is essential. The word 'startups' made its way explicitly in to the Indian budget lexicon only last year. And then, Prime Minister Narendra Modi in his Independence Day speech announced a new campaign — Startup India; Stand up India — to promote entrepreneurship.
- Today, India has about 110 start-up accelerators and in 2014 there were only 80 of them. The number of platforms where a person can work to build a new venture has gone up significantly.
- Presently, India receives the third highest level of venture capital funding in all the countries of the world. In 2015, the country received in just six months, the entire funding it received in 2014. Truly, the year 2015 brought forth a strong wave of start up oriented investments into India.
- Arun Jaitley launched India Aspiration Fund in mid-2015 which has been set up as a fund of funds under the Small Industries Development Bank of India (SIDBI) in order to boost the startup ecosystem in the country. The fund has been earmarked with a total corpus of Rs. 2000 crore fund. An initial corpus of Rs 400 crore has been already allocated to various venture funds under it.
- A new scheme called SIDBI Make in India Loan for Small Enterprises (SMILE) with an allocation of Rs 10,000 crore has also been launched by the current finance minister, Mr. Arun Jaitley.
- The SMILE is expected to catalyse tens of thousands of crore of equity investment in startups and MSMEs, creating employment for lakhs of people over the next 4-5 years. (reaping demographic dividend)
- The objective of SMILE scheme will be to provide soft loans in the nature of quasi-equity and term loans on relatively soft terms to MSMEs. The loan scheme's focus will be on 25 sectors under government's 'Make in India' programme with emphasis on financing smaller enterprises within the MSME sector.
- Recently, Telangana launched what is called the T-Hub, India's largest technology incubator. The facility is almost completely booked, having attracted over 130 startups from across India. It has also tied-up with 20 venture capitalists, and is in talks with the University of Texas, MIT Media Lab, Incubio of Spain, and laboratories and academic institutions in India for collaboration. Despite these examples, India's startups spawn and grow in outer shores instead of sprouting in India itself because of lack of adequate government encouragement

and support.

However, despite the strong wave of startup culture sweeping the country, many startups shift their bases to other countries owing to the presence of better regulatory environment especially in places such as London, Singapore and USA.

(p) A new market mechanism to provide opportunities for voluntary cooperation in the implementation of the NDCs has been agreed.

(q) An enhanced system for transparency has been agreed to. This will cover not only mitigation and adaptation actions, but also the support provided by developed countries.

(r) A separate Capacity Building Initiative for transparency to help developing countries has been agreed to in order to build institutional and technical capacity.

(s) A new institutional arrangement viz. Paris Committee on Capacity Building will be established for enhancing capacity building activities in developing countries under the Agreement. Developed countries are to provide financial support for capacity building to developing countries.

(t) Pre-2020 actions are also part of the decisions. The developed country parties are urged to scale up their level of financial support with a complete road map to achieve the goal of jointly providing US \$ 100 billion by 2020 for mitigation and adaptation by significantly increasing adaptation finance from current levels and to further provide appropriate technology and capacity building support.

RENEWABLE ENERGY SECTOR

India:

- India aims to install 60 GW of wind power capacity and 100 GW of solar power capacity by 2022. This target is more than six times the current installed capacities of approximately 22GW and 3GW, respectively.
- This important task is made difficult by the government's limited budget, which is constrained by a large fiscal deficit and multiple development priorities.
- In Renewable Energy India should go in for Offshore Wind Farms since it has a long coastline of 7516.6 km. It is a pity that though India occupies 5th position in the wind, and offshore energy potential, wind farms are yet to be installed.
- Another policy that can be adopted should be to encourage wind farm co-operatives on the lines of those in Denmark and Germany and community solar on the lines of those in US.
- Since the country has huge wastelands it is advisable to go for mass plantation of care free growth, regenerative CAM plants like Agave and Opuntia for Biogaspower/biofuel/biochar. These will act as Carbon Sink.
- Yet another option is replacing the inefficient agricultural pump sets with efficient ones (there are 26 Million pump sets in the country) which can save about 25% of power. Agriculture sector consumes a huge amount power, and is next only to Industry in terms of consumption.

Is India prepared for disaster?

A year ago, Indians were shocked when catastrophic floods hit the state of Uttarakhand in the country's northwest, killing more than 5,500 and affecting more than 100,000 others.

Experts blamed the heavy toll in part on the state government's lack of preparedness to handle disasters, despite a history of calamities in the region, including 1998 flooding that killed over 300 people in one village.

Last year's flood, considered India's worst natural disaster since the 2004 Asian tsunami, has left experts questioning whether the country is adequately prepared to respond to disasters, particularly at the state and local level.

Alarming Disaster Profile:

- Almost 85 percent of the country is vulnerable to one or more hazards such as earthquakes, floods, droughts, cyclones and landslides. More than 50 million people are affected by natural disasters annually, according to the National Institute of Disaster Management (NIDM).
- Floods, droughts, cyclones, earthquakes and landslides have been a recurrent phenomena. Being highly vulnerable to natural disaster, 25 states out of a total of 35 states/UTs in India are considered disaster prone.
- 68% of Indian land is drought prone, 12% to flood and 8% to cyclone. The loss in terms of private, community and public assets has been astronomical. Disaster Management should occupy an important place of consideration for India's policy makers as it is the poor and the under-privileged who are worst affected on account of calamities/disasters
- Yet India's preparedness lags far behind what is needed given the magnitude of the potential dangers, experts say. India's vulnerability arises in part because of a lack of know-how for assessing risks at very local level, poor enforcement of standards and regulations, and inadequate risk mitigation.

Disaster Preparedness

- India passed National Disaster Management Act, 2005 to lay down a framework for addressing situations of natural disasters. The act created a National Disaster Management Authority (NDMA), with the power to allocate resources and supervise disaster management

across the country. A national disaster response force (NDRF) was also formed for rescue and evacuation. In addition, the act authorised the government to strengthen existing infrastructure in disaster-prone areas and help create an early-warning system.

- The states are authorized to set up State Disaster Management Authority that would aid in disaster management for a particular state.
- Although the Act has been put into effect at the national level, it exists only on paper in a few states and districts.
- The few states with functioning state disaster management authorities, such as Odisha, Andhra Pradesh, Gujarat and Bihar, are the ones with the most serious history of natural disasters.
- Other vulnerable states like Jammu and Kashmir, Uttarakhand, West Bengal, Tamil Nadu, Sikkim and Assam need to step up their preparedness considerably. Even relatively well-off states are not necessarily and adequately prepared to respond in a disaster.
- **Mumbai:** A 2014 World Development Report said Maharashtra's largest and most cosmopolitan city, Mumbai, remains highly vulnerable to the heavy rains that occur almost annually, despite well-identified solutions to reduce the risks.
 - The drainage system in Mumbai is 70 years old, runs for only 480 km and is incapable of handling monsoon rains.
 - Despite passage of several reports and committee recommendations over the last 40 years including Nathu Committee Report (1975), "Brihanmumbai Storm Water Drainage Project (or BRIMSTOWAD) Report" of 1993, and the "Mithi River Water Pollution and Recommendation for its Control" by Klean Environment Consultants in 2004. Despite so many reports and recommendations, nothing has come out in concrete yet.
 - Strengthening city's infrastructure to resist flood risks and adapt to climate change is imperative, especially when the city's gravity drainage system was designed way in the 1920s. Its storm water drainage was designed for a rainfall of 25 mm per hour. The 1993 BRIMSTOWAD report had recommended increasing the storm water drainage capacity to 50 mm per hour. Twenty-two years later, the corporation is still working on it. Had this work completed, Mumbaikars would have been spared this year's (2015) chaos during monsoons, which occurred with hourly rainfall of 34.8 mm.
 - The drainage system works mostly on the function of gravity with no power driven pumping to drain out excess water.
 - Apart from overhauling the drainage system of Mumbai, the BRIMSTOWAD report had

recommended the construction of eight pumping stations to expel water into the sea in areas where drains cannot be widened. Of these eight stations, only two have been completed so far. After years of delay, the other two pumping stations – Love Grove in Worli and Cleveland Bunder in Reay Road – had trial runs only last month. The Rs 102-crore Cleveland pumping station was finally inaugurated this year but it quickly developed a fault within two days when monsoon rains lashed Mumbai in July.

- Unhealthy garbage disposal habits such as disposing it off by throwing it in gutters, drains and rivers also leads to choking the flow of water.

Causes for Chennai Floods – A man made disaster

- **The lack of enforcement of planning:** rules has resulted in rampant building violations, such as encroaching roads and pavements, illegal connections of sewerage lines to storm water drains and construction on ponds, lakes, marshes and other natural catchment areas. (Catchment areas are areas around a river, lake or a water body, through which rainfall flows naturally. Presence of catchment areas help in draining excessive water levels and transferring it to the water bodies. A storm water drain or simply a drain or drain system is designed to drain excess rain and ground water from impervious surfaces such as paved streets, car parks, parking lots, footpaths, sidewalks, and roofs).
- **The city lacks an adequate drainage network.** Despite several crores being allocated (in the Chennai Corporation budget and JNNURM) to the construction of storm water drains (SWD), only a fraction of Chennai's roads are accompanied by SWD.
- **Shrinking area of wetlands.** Wetlands are important as they help reduce the impact of storm damage and flooding, by soaking in copious amounts of water. However the area coming under these are fast shrinking. Some 40 years ago, the area of 'Pallikaranai' was a 50 sq. km marshland and now it has been reduced to a tenth of its size. 90% of the marshland was lost to construction of IT corridors, gated community, garbage dump, sewage treatment plant, etc.
- **Encroachment of water bodies:** Areas that were previously water bodies have been encroached upon by constructors and builders, including the government. Natural drainages such as these water bodies were converted into an impervious concrete sprawl. Areas, including MRC Nagar, built on the Adyar estuary, the Mass Rapid Transit System, built almost wholly on the Buckingham canal, Koyambedu Bus Terminal, the expressway and buildings on the Old Mahabalipuram Road, that are examples of blatant encroachments on waterways and water bodies.
- **Lack of desilting infrastructure:** Continuous desilting of flood plains is necessary, as rains

cause aggregation of sand and other particles causing the floor level to rise. Regular and timely desilting dredges out the extra sand brought by rains and thus permits the maintenance of a naturally low lying area for collection of water and its efficient disposal.